

group as they are seen when a 1 per cent. solution and graphite electrodes are used, and of two isolated lines which are less refrangible; with them are compared the lines photographed from other more dilute solutions. The sodium line  $\lambda$  3301 appears as a long line in the 1 per cent. solution and becomes shorter as the quantity of substance is reduced.

Observations were carried as far as a solution containing 0.000001 per cent. of silicon, the two strongest lines being still visible, but as the photographs of these more dilute solutions have been damaged by being kept so long a time in the atmosphere of the chemical laboratory, they are not now available for similar measurements.

As the sodium lines are suppressed when the silicon lines are strong, the two carbon lines are also reduced very much in length and strength. This is very easily observed on account of the close proximity of the silicon lines, the wave-lengths of the two carbon lines being 2508.7 and 2511.6 (Hartley and Adeney). In the more dilute solution, these lines are observed to be lengthened until they become of the normal dimensions of 20/100ths of an inch. It thus appears more than probable that the suppression of the sodium does not result from any chemical action within the spark discharge, such as might be supposed to occur if the sodium were dissociated from the compound, and being in contact with a silicate were to liberate silicon, or to combine with silicon directly, and in presence of water give rise to the formation of silicon hydride.

The suppression of much of the sodium spectrum, and the shortening and weakening of the carbon lines, is more likely to be a purely physical phenomenon than the result of any chemical reaction in the spark.

“Some Additional Notes on the Orientation of Greek Temples, being the Result of a Journey to Greece and Sicily in April and May, 1900.” By F. C. PENROSE, M.A., F.R.S. Received January 17,—Read February 14, 1901.

(Abstract.)

The paper contains notes on two examples from Greece and four from Sicily—of these, three are of the nature of amplification and correction, and three are fresh cases.

(1.) To the second head belongs a rude and archaic shrine in the Isle of Delos; not improbably the most ancient existing example of a religious structure on Greek soil. It exhibits the usual stellar connection with its orientation and an approximate date conformable with its remote antiquity (1530 B.C.).

(2.) Some further observations on the Temple of Apollo, at Delphi, of which the recent complete clearance of the site admitted of measurement with greater exactness than before.

(3.) At Syracuse I found that the architecture of the temple which has been erroneously attributed to Diana,\* was of a character much too archaic for the date assigned to it in that paper, which had been derived from the orientation of the axis; but that when taken from the northern limit of the eastern opening the date would be quite consistent both with architecture and the history of the town.

(4.) This led to a re-examination of the other Syracusan examples and an error was discovered, altering the orientation of the temple attributed to Minerva, and its derived date, from 815 to 550 B.C., to its great advantage in every respect.

(5.) The most interesting example, however, is from another Sicilian temple lately unearthed at Selinus. Of this temple I found the orientation of the eastern axis to be  $30^{\circ} 22'$  north amplitude, which at once suggests a solar temple arranged for the summer solstice, which for a level site and for the date in question, should be  $30^{\circ} 35'$ . But the temple's site is near the bottom of a valley; and the sun would have to gain an altitude of rather more than two and a half degrees before it could shine into the temple; and then the amplitude required would be  $28^{\circ} 17'$ . Thus apart from what may be derived from the plan of the temple itself, the orientation theory would seem to show to a disadvantage. At the same time the peculiarities of the plan of the temple would be difficult to explain without the orientation theory.

Presumably the angle upon which the lines of the temple were set out was taken from data obtained on some platform which had a level horizon, and the building was considerably advanced before the actual solstice came round and showed the error that had been made.

To meet the difficulty a *naos* was constructed within the flank walls, but hugging the northern one; so that the first beam of sunrise coming through the centre of the eastern aperture, at the local amplitude of  $+ 28^{\circ} 17' E.$ , might shine in centrally upon the statue of the deity: and for this a pedestal was provided a little northwards of the centre of the niche which had been previously formed for it. We may notice also that the angle of the Propylæa is so placed as to keep exactly clear of the point of sunrise (see figure, next page).

(6.) An argument is drawn from the orientation of the foundations of a small temple lately discovered, adjoining the famous theatre at Taormina, that the theatre itself was that of the city of Naxos, which occupied the sea-coast at about 800 feet immediately below it; and not the work of the much later town of Tauromenium, from which Taormina derives its name.

\* 'Phil. Trans.,' A, vol. 190, 1897, p. 39.

FIG. 1.

